An introduction to citation analysis

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This article aims to provide an introduction to citation analysis. It is in two parts. The first part discusses the concept of citation analysis with an explanation of some of the terms involved. It then goes on to look at four of the tools for citation analysis ISI (Thomson Reuters) Journal Citation Reports (JCR), Eigenfactor, SCImago and Publish or Perish, highlighting any limitations.

The second part presents in tabular form an analysis of journals within the area of Sociology using these tools as well as journal-ranking.com and Microsoft Academic Search.

Journal articles play an important role in the dissemination of knowledge. Academics need to know which journals are considered the prestigious ones when they submit their articles. Editors and publishers can use the rankings to boast about the reputation of their journal and to search for changes in status relative to other journals. In these days of financial stringency there is an increased pressure on individual academics and departments to justify their research productivity. The ranking of journals can assist in the process of assessing this productivity. For librarians journal rankings can be useful in deciding on subscription renewals and cancellations. Cameron (2005, cited in Levine-Clark and Gil, 2009, p. 33) highlights the fact that rankings can be used to compare databases based on an analysis of the journals on those databases.

Harzing and van der Wal (2007, p. 41) distinguish two approaches to ranking journals: stated preference and revealed preference. Stated preference involves members of the academic community ranking journals on the basis of their own expert judgement. This will always have some degree of subjectivity. Revealed preference rankings are based on actual publication behaviour. If an author cites a journal, he or she has found it useful, and, therefore, the more frequently a journal is cited, the greater its role in the scholarly communication process (Nisonger, 1994, cited in Romano and Ratnatunga, 1996, p. 8).

It is with revealed preference which citation analysis deals. It is based on the assumption that most research discoveries are sooner or later published in international scholarly journals and will be read by other researchers who, in their turn, will cite the original articles. The more citations an article gets, the greater impact it will have. There are, however, some caveats that should be expressed.

A large number of citations does not automatically mean that a work is of high quality. It may be heavily cited because lots of other authors are refuting the research findings it contains. There is the problem as well with self-citations. There are citation circles or cabals: friends citing friends. Restrictions on the length of the list of citations imposed by editors could result in an author culling the number of

references they provide. A citation could be a superficial reference to a review article.

One should also note that not being cited does not invalidate a work. A work does not have to be cited to have influenced someone else's work. There is also 'delayed recognition'. Although, work is cited most in the ten years after its publication, some work is not picked up on a considerable time which affects its citation ratings, eg work on retro-viruses before AIDS.

If an author is cited on numerous occasions, it is probably the case that they have made a significant impact on the field of research. Whereas, if an author is cited infrequently, they could have made a minimal impact on their field of research. At the same time, however, their low citation count could be attributed to working in a small field or in a language other than English or publishing mainly in books.

For several years the Thomson Reuters citations databases have been used as a starting-point and often the only tools for locating citations for conducting citation analyses. In the 2011 JCR an alphabetical list of 137 journals is available. It is possible to sort the results by various metrics, such as impact factor, immediacy index, cited half-life etc.

Let us now look more closely at the Impact Factor (IF). The IF is the mean number of articles received in a particular year to articles published in the preceding two years. An IF of 1.0 means that, on average, the articles published one or two year ago have been cited one time. An IF of 2.5 means that, on average, the articles published one or two year ago have been cited two and a half times.

IF has certain advantages as a citation measure. It is easy to calculate and easy to explain. At the same time, however, this simplicity does bring drawbacks with it.

Seglen (1992, cited in Cameron, 2005, p. 110) argued

> The distribution of citations is extremely skewed [...] the most cited 15 percent of the articles account for 50 percent of the citations, and the most cited 50 percent of the articles account for 90 percent of the citations. In other words, the most cited half of the articles are cited, on average, 10 times as often as the least cited half.

Nightingale and Marshall (2012, p. 63) confirm Seglen's findings and argue that the 'skewed distribution of citations across all papers in a journal means that the impact factor is not a reflection of the average citation of any given paper within the journal'.

Saper (1999, cited in Cameron, 2005, p. 111) raises another problem with the IF. He observes that some research has made such an indelible impact that 'it is immediately incorporated into the conceptual basis of a field and its origin is quickly lost in the mists of time'. So, journals that specialize in review articles (ie articles that

publish summaries of past research) have much higher impact factors because they act as surrogates for previously published research. For example, six of the top ten neuroscience journals publish exclusively review articles.

For Jacobs (2010, p. 5) among the problems with the IF is the 'short time frame' highlighting the fact that in Sociology 'it is not uncommon for papers to grow in influence for a decade or more after publication'. He does, however, welcome the 'cited half-life statistic'. This indicates how many years it takes for half of the cumulative citations to papers to be registered. It should be noted that in Sociology it is common for journals to have a cited half-life of a decade or more (48 of the journals in the 2011 JCR have a cited half-life of more than ten years). He considers the very short frames employed in the natural-science fields inappropriate for the Sociology journals and advocates a 'ten year time horizon for assessing the visibility or impact of research' published in them. He acknowledges that the introduction of the 5-year IF (from 2007) is beneficial. He advocates the use of the 5-year IF in any journal comparison.

In its Cited Reference function Web of Science does include citations from non-ISI journals. Unfortunately, it only includes citations from journals that are ISI-listed. Moreover, ISI covers only a segment of the journals published in each discipline. ISI argues that it indexes in the *Web of Science* journals that are known to be of high quality. By this measure new journals would have little hope of being included.

A further drawback of the JCR is that many foreign language journals are excluded. As a result English language journals have much higher impact factors. Moreover, the journals in the ISI indexes are limited in scope geographically. Onyancha (2009, p. 102) highlights the fact most journals published in Africa are not indexed in them. He quotes an earlier study that he made which found that ISI only indexed 28 African journals in 2006.

It should be noted that Sociology is a field in which both books and journal articles matter. Unfortunately, citations appearing in books are not captured in the ISI JCRs.

Nightingale and Marshall (2012, p. 63) highlight the fact that there is no acknowledgement in the ISI ranking of the influence of the journal from which the journal comes. A citation in *The Lancet* is perhaps valued more highly than one in a lower ranked journal with a limited readership. The same point is made by West, Bergstrom and Bergstrom (2010, p. 237) when they argue that a 'citation from a top-tier journal such as *The American Economic Review* is weighted the same as a citation from a journal that is rarely cited'. Accounting for the source of each citation requires a more complicated computation than is required for calculating the impact factor, but the result gives a better measure of quality. The Eigenfactor metric which

is a free service available at http://www.eigenfactor.org/ takes into consideration journal quality. In the next section we will look more closely at this.

The Eigenfactor Score and its companion indicator the Article Influence Score were launched in Spring 2007 and included in the JCR for 2007 and later. They were created by Dr Carl Bergstron. These two indicators, as Craig (2009, p. 2976) points out 'relied on the structure of the entire citation network of scholarly communication to measure the prestige of a journal, rather than simply relying on the numbers of citations received'. Bergstron (2007, pp. 314-317) outlines the approach adopted. Their aim is to rank journals much as Google ranks Web pages. While Google uses the network of hyperlinks on the Web, they use citations in the literature as tallied by the JCR. They aim to identify the most influential journals where a journal is considered to be influential, if it is cited often by other influential journals. The iterative ranking scheme, accounts for the fact that a single citation from a high-quality journal may be more valuable than multiple citations from peripheral publications.

The Eigenfactor team measures the importance of a citation by the influence of the citing journal *divided by the total number of citations appearing in that journal.* For example, a citation from a review article that has cursory references to large numbers of papers counts for less than a citation from a research article that cites only papers that are essentially related to its own argument.

Another resource which offers more coverage than the ISI JCR is the free resource SCImago which can be accessed at http://www.scimagojr.com/. The SCImago Journal Rank Indicator (SJR) is based on data from the Scopus database and provides information on more journals published in a wider range of languages than does the JCR. 'The SJR indicator measures the scientific influence of the average article in a journal, it expresses how central to the global scientific discussion an average article of the journal is' (SCImago, 2012). The SJRs may be considered as being similar to the Eigenfactor score. The major difference is that the SJRs are based on data obtained from Elsevier's Scopus database which includes more than 17,000 titles from 5,000 publishers. Because of the broader coverage provided by Scopus, SCImago provides scholars with more information about more titles than is provided by either the JCR or Eigenfactor.

As with the JCR it divides citations to a journal by articles of the journal, during a specific time period. The citation time window is set to three years. Contrary to the journal IF, the SJR indicator attributes different weight to citations depending on the 'prestige' of the citing journal without the influence of journal self-citations; prestige is estimated with the application of the PageRank algorithm developed by the creators of Google in the network of journals.

So far we have looked at the conventional citation systems like Web of Science, Eigenfactor and SCImago which take their data from databases. Their limitations need to be kept in mind by social scientists, as they cover only around 30 to 40 per cent of journals and books in social sciences published worldwide. Most

bibliometric experts acknowledge that the usefulness of these systems declines sharply if they include fewer than three quarters to two thirds of all journal articles world-wide. The conventional systems also have a heavy bias in coverage towards American and English-language journals and tends to deliver rankings and statistics that are weighted heavily towards success in the US 'market', compared with the rest of the world. The ISI system does not cover references in books, which poses serious difficulties for accurately measuring citations within 'softer' social science fields and humanities where books remain very important. The older systems completely exclude references in working papers or conference papers, which are important for social scientists as publishing a journal articles can take several years.

We will now look at the free citation software package Publish or Perish which draws its raw data from Google Scholar. Google and Google Scholar automatically record all citations. They include journals and books as well as 'grey' literature such as working papers, conference papers, seminar discussions or teaching materials that has been issued in a less formal or definitive form – often, of course, including versions of material that is later formally published. As a result of this Publish or Perish offers a wider coverage than is provided by the other citation analysis tools which we have discussed and can be considered as a viable alternative. It provides a detailed analysis both of individual authors and of journal titles. Through it one can find the average number of citations per author and per journal title and also the average number of citations per year. Publish or perish also gives the author's and the journal title's h-index. As can be seen from the table in section two it provides a further metric, that of Egghe's g-index, which aims to improve on the h-index by giving more weight to highly-cited articles.

It is hoped that this article has given a basic introduction to citation analysis, indicating as it does some of the terms involved and the caveats about the use of citations. It also provides an analysis of four of the main tools which can be used for citation analysis. In section two the theory is put into practice with a comparative analysis in tabular form of the top fifty journals ranked by the ISI JCR 5-year Impact Factor. In its footnotes the table also provides explanations of the calculations used for the various statistics.

Bergstrom, C. (2007) 'Eigenfactor: measuring the value and prestige of scholarly journals', *College & Research Libraries News,* 68(5), pp. 314-316.

Cameron, Brian D., 'Trends in the usage of ISI Bibliometric Data: uses, abuses, and implications' (2005). *Librarian and Staff Publications,* Paper 3. http://digitalcommons.ryerson.ca/library_pubs/3

Craig, I.D. (2009) 'Impact factor redux- new indicators, new challenges', *Journal of Sexual Medicine,* 6(11), pp. 2976-2978.

Davis, P.M. (2008) 'Eigenfactor: does the principle of repeated improvement result in better journal impact estimates than raw citation counts', *Journal of the American Society for Information Science and Technology,* 59(13), pp. 2186-2188.

Falagas, M.E., Kouranos, V.D., Arencibia-Jorge, R. and Karageropoulos, D.E. (2008) 'Comparison of SCImago journal rank indicator', *FASEB Journal*, 22(8), pp. 2623-2628.

González-Pereiraa, B., Guerrero-Boteb, V. P. and Moya-Anegónc, F. (2009) *The SJR indicator: a new indicator of journals' scientific prestige.* Available at: http://arxiv.org/ftp/arxiv/papers/0912/0912.4141.pdf (Accessed: 9 August 2012).

Harzing, A-W. (2007) 'A Google Scholar h-index for journals: a better metric to measure journal impact in economics and business?', *Journal of the American Society for Information Science and Technology,* 60(1), pp. 41-46,

Harzing, A-W and Van der Wal, R. (2007) *Google Scholar: the democratization of citation analysis.* Available at: http://www.harzing.com/download/gsdemo.pdf (Accessed: 31 July 2012).

Jacobs, J.A. (2010) *A new approach to journal rankings in Sociology: using the h-index with Google Scholar*. Available at: https://**sociology**.sas.upenn.edu/.../**sociology**.../. (Accessed 8 August 2012).

Levine-Clark, M. and Gil, E.L. (2006) 'A comparative analysis of 'Web of Science', Scopus and Google Scholar', *Journal of Business and Finance Librarianship,* 14, 23-46.

LSE (2011) *Why 'Publish or Perish' has the edge over Google Scholar and Scopus when it comes to finding out how your work is used by other academics.* Available at: http://blogs.lse.ac.uk/ (Accessed: 9 August 2012).

Meho, L.I. and Yang, K. (2007) 'Impact of data sources on citation counts and rankings of LIS faculty: Web of Science versus Scopus and Google Scholar', *Journal of the American Society for Information Science and Technology,* 58(3), pp. 2105-2125.

Nightingale, J.M. and Marshall, G. (2012) 'Citation analysis as a measure of article quality, journal influence and individual researcher performance', *Radiography,* 18, pp. 60-67.

Onyancha, O. B. (2009) 'A citation analysis of Sub-Saharan African library and information science journals using Google Scholar', *African Journal of Library, Archives and Information Science,* 19(2), pp. 101-116.

Romano, C. and Ratnatunga, J. (1996) 'A citation analysis of the impact of journals on contemporary small enterprise research', *Entrepreneurship:Theory and Practice,* 20(3), pp. 7-21.

Smith, G. and Krogstad, J.L. (2006) *Analysis of citation frequencies to 'Auditing: a Journal of Practice and Theory': 1985-2005.* Available at:

http://aaahq.org/audit/midyear/07midyear/papers/Smith_AnalysisOfCitationFrequencies.pdf (Accessed: 31 July 2012).

Steers, W.D. (2011) 'Impact Factor vs Eigenfactor', *AUA News,* 16(10), pp. 16-17.

Straub, D. (2010) 'Journal quality and citations: common metrics', *MIS Quarterly,* 34(1), pp. Iii-xii.

Purnell, P. (2011) *Using bibliometrics*. http://www.jisc.ac.uk/media/documents/events/2011/03/jisc11goodybag/workshops/1bibliometrics.pdf

Thelwall, M. (2008) 'Bibliometrics to webometrics', *Journal of Information Science,* 34, pp. 605-621.

University of Leicester (no date) *Journal Citation Reports.* Available at: http://www2.le.ac.uk/library/for/researchers/bibliometrics/journals (Accessed: 7 August 2012).

University of Southampton (2011) *Eigenfactor metrics- Eigenfactor score and score and article influence score.* Available at: http://www.southampton.ac.uk

West, J.D., Bergstrom, T.C. and Bergstrom, C.T. (2010) 'The Eigenfactor Metrics: a network approach to assessing scholarly journals', *College & Research Libraries,* pp. 236-244.

The top 50 Sociology journals as ranked by the 5-year Journal Impact Factor in the 2011 Journal Citation Reports.

The following table lists the top 50 Sociology journals ranked by the 5-year Journal Impact Factor in the 2011 Journal Citation Reports (JCR). It also gives:

- where each journal is published
- the JCR Impact factor for the 50 journals with their ranking (ex: 137 titles)
- the Eigenfactor Article Influence Score (ex: 137 titles)
- the journals' score and ranking as provided by journal-ranking.com (ex: 138)
- the SCImago Journal Rank Indicator (ex: 459 titles Sociology and Politics)
- the SCImago h-index ranking (ex: 459 titles Sociology and Politics)
- the Publish or Perish g-index rankling (out of the top 50 5-year Journal IF)
- the Microsoft Academic Search h-index (ex: 154)
- the cost-effectiveness of each journal.

The table gives the score for each journal using the different citation analysis tools and gives in square brackets the ranking of each title. The subject area ranking is given when it is not Sociology.

An explanation of the various scores is given at the end of the table with particular reference being made to the *Annual Review of Sociology*.

More details about each of these citation analysis tools may be found through the links:

Eigenfactor

http://www.eigenfactor.org/

Journal-ranking.com

http://www.journal-ranking.com/ranking/web/content/intro.htm

Journal Citation Reports

http://wokinfo.com/media/pdf/jcrwebfs.pdf

Microsoft Academic Search

http://academic.research.microsoft.com/

SCImago

http://www.scimagojr.com/

The top fifty Sociology journals as ranked by the 2011 JCR 5-Year Impact Factor.

Journal	JCR 5-Year Impact Ranking	JCR 5-year Impact (1)	JCR Impact Factor Ex: 137 (2)	Eigenfactor Article Inf.	Journal-ranking.com PII (4)	SCImago SJR 2011 (5)	SCImago (h-index) (6)	Publish or Perish g-index (7)	Microsoft A.Search h-index (8)	Cost Effectiveness (9)
Annual Review of Sociology (USA)	1	5.881	4.442 [1]	3.794 [2]	663.94 [3]	0.092 [4]	75 [4]	127 [6]	88 [2]	0.2832
American Sociological Review (USA)	2	5.777	4.422 [2]	3.940 [1]	1162.49 [2]	0.104 [4]	87 [2]	152 [1]	34 [14]	0.1452
American Journal of Sociology (USA)	3	4.561	3.169 [4]	3.064 [3]	1232.56 [1]	0.069 [9]	83 [3]	149 [2]	128 [1]	0.5817
Social Networks (Neth's)	4	3.479	2.931 [6]	1.781 [6]	253.36 [8]	0.077 [7]	39 [23]	110 [8]	51 [52 in soc sci]	1.1846
Annals of Tourism Research (USA)	5	3.356	3.259 [3]	0.638 [40]	20.01 [22]	0.040 [2 within tourism]	57 [1 in tourism]	130 [5]	48 [57 in soc sci]	2.7447
Sociological Methodology (UK)	6	2.925	3.000 [5]	2.216 [4]	521.10 [4]	0.224 [2]	28 [59]	63 [29=]	25 [7 in soc sci method]	1.3136

Journal	JCR 5-Year Impact ranking	JCR 5-year Impact (1)	JCR Impact Factor (2)	Eigenfactor Article Influence (3)	Journal-ranking.com PII (4)	SCImago SJR (5)	SCImago (h-index) (6)	Publish or Perish g-index (7)	Microsoft Academic Search (8)	Cost Effectiveness (9)
Sociology of Education (USA)	7	2.725	1.750 [16]	1.528 [8]	359.48 [6]	0.045 [46 education]	44	131 [4]	15 [142 in education]	0.8289
Journal of Marriage and Family (UK)	8	2.624	2.028 [10]	1.271 [13]	229.27 [10]	0.055 [31 in soc sci misc]	78 [2 in soc sci misc]	126 [7]	52 [7 in Anthropology]	0.8675
Sociology of Health and Illness (UK)	9	2.546	1.885 [13]	0.916 [23]	50.86 [30]	0.078 [118 in public health]	47 [39 in public health]	79 [17]	42 [7]	2.2612
Gender & Society (USA)	10	2.470	2.414 [7]	1.231 [14]	109.23 [14]	0.043 [33]	38 [24]	89 [12]	36 [17 in Anthropology]	1.5873
Population and Development Review (UK)	11	2.463	2.224 [8]	1.830 [5]	259.48 [7]	0.396 [1]	45 [13]	91 [11]	40 [13 in Anthropology]	0.3194
Sociological Methods & Research (US)	12	2.39	1.524 [5]	1.444 [9]	382.88 [5]	0.045 [8 in soc sci misc]	32 [33 in soc sci misc]	68 [27]	47 [2 in method of soc sci]	2.0253
Economy and Society (USA)	13	2.378	1.7 [17]	1.301 [10]	51.01 [29]	0.039 [75 soc sci]	38 [16 in soc sci]	N/A	34 [146 in soc sci]	1.6383

Journal	JCR 5-Year Impact Ranking	JCR 5-year Impact (1)	JCR Impact Factor (2)	Eigenfactor Article Influence (3)	Journal-ranking.com PII (4)	SCImago SJR (5)	SCImago (h-index) (6)	Publish or Perish g-index (7)	Microsoft A.Search (8)	Cost Effectiveness (9)
Social Problems (USA)	14	2.317	1.226 [36]	1.289 [11]	222.46 [9]	0.041 [42]	41 [19]	76 [19]	55 [2 in social issues]	0.8357
European Sociological Review (UK)	15	2.239	1.935 [11]	1.064 [16]	52.89 [28]	0.049 [23]	30 [46]	86 [14]	25 [25]	1.6354
Politics and Society (USA)	16	2.213	2.118 [9]	1.615 [7]	61.13 [26]	0.034 [88]	N/A	73 [21]	34 [29 in political science]	3.8662
Social Forces (USA)	17	2.203	1.291 [31]	1.289 [11]	234.01 [9]	0.040 [45]	61 [7]	104 [10]	34 [28 in political science]	0.2844
Rural Sociology (USA)	18	2.202	1.886 [12]	0.873 [26]	80.02 [22]	0.039 [49]	30 [48]	57 [36]	24 [29]	1.8054
British Journal of Sociology (UK)	19	2.152	1.621 [20]	1.228 [15]	66.85 [24]	0.035 [80]	35 [35]	105 [9]	23 [30]	1.3793
Human Ecology (USA)	20	2.092	1.629 [19]	0.742 [32]	42.91 [38]	0.064 [13]	31 [44]	61 [32=]	34 [19 in Anthropology	3.9435

Journal	JCR 5-Year Impact Ranking	JCR 5-year Impact (1)	JCR Impact Factor (2)	Eigenfactor Article Influence (3)	Journal-ranking.com PII (4)	SCImago SJR (5)	SCImago (h-index) (6)	Publish or Perish g-index (7)	Microsoft A.Search (8)	Cost Effectiveness (9)
Social Science Research (USA)	21	1.994	1.273 [34]	1.046 [17]	94.84 [18]	0.047 [35 in education]	32 [35 in education]	71 [24]	37 [3 in method of soc sci]	1.0083
Sociologia Ruralis (UK)	22	1.954	1.362 [28]	0.614 [44]	42.21 [39]	0.059 [16]	41 [20]	72 [22=]	38 [110 in soc sci]	3.2107
Global Networks (UK)	23	1.944	1.686 [18]	0.985 [21]	N/A	0.038 [87 in soc sci misc]	21 [68 in soc sci misc]	72 [22=]	21 [519 in computers]	2.2513
Sociology (UK)	24	1.888	1.352 [29]	0.990 [20]	49.42 [33]	0.043 [34]	44 [16]	???	39 [9]	1.0258
Youth & Society (USA)	25	1.845	1.816 [14]	0.665 [37]	36.30 [41]	0.051 [38 in soc sci misc]	28 [49 in soc sci misc]	58 [35]	26 [24 in anthropology]	4.504
Law & Society Review (UK)	26	1.744	1.434 [24]	1.003 [18]	121.97 [12]	0.031 [55 in law]	31 [8 in law]	66 [28]	14 [25 in Law and Criminology]	1.3001

Journal	JCR 5-Year Impact Ranking	JCR 5-year Impact (1)	JCR Impact Factor (2)	Eigenfactor Article Influence (3)	Journal-ranking.com PII (4)	SCImago SJR (5)	SCImago (h-index) (6)	Publish or Perish g-index (7)	Microsoft A.Search (8)	Cost Effectiveness (9)
International Journal of Intercultural Relations (Netherlands)	27	1.735	1.142 [40]	0.536 [54]	N/A	0.039 [48]	28 [56]	70 [25=]	33 [32 in political science]	N/A
Poetics (Netherlands)	28	1.733	1.418 [26]	0.759 [31]	55.50 [27]	0.034 [44 in language and linguistics]	21 [32 in language and linguistics	50 [40]	26 [21]	2.61
Agriculture and Human Values (Netherlands)	29	1.717	1.540 [21]	0.644 [39]	15.46 [65]	0.048 [52 in agronomy]	27 [45 in agronomy]	55 [39]	20 [70 in arts and humanities]	2.7106
International Political Sociology (USA)	30	1.663	1.381 [27]	0.792 [29]	N/A	0.029 [167]	7 [194]	30 [46=]	5 [108]	N/A
Work and Occupations (USA)	31	1.646	0.886 [61]	0.882 [61]	91.99 [20]	0.031 [36]	32 [13 organizational]	56 [37=]	31 [16]	4.8726
Leisure Sciences (UK)	32	1.612	1.066 [46]	0.392 [64]	23.91 [52]	0.041 [40]	51 [29]	56 [37=]	28 [18]	4.2443
J Sci Stud Reli (USA)	33	1.607	1.348 [30]	0.559 [50]	105.59 [15]	0.036 [98 soc sci misc]]	30 [44 soc sci misc]	74 [20=]	22 [religion]	0.5546

Journal	JCR 5-Year Impact Ranking	JCR 5-year Impact (1)	JCR Impact Factor (2)	Eigenfactor Article Influence (3)	Journal-ranking.com PII (4)	SCImago SJR (5)	SCImago (h-index) (6)	Publish or Perish g-index (7)	Microsoft A.Search (h-index) (8)	Cost Effectiveness (9)
Work, employment and society (USA)	34	1.597	1.597 [35]	0.632 [42]	N/A	0.037 [63]	33 [40]	70 [25=]	27 [20]	0.5546
Language in Society (UK)	35	1.594	1.189 [37]	0.946 [22]	67.15 [23]	0.030 [80 language]	26 [80 language]	80 [15=]	40 [5 linguistics]	1.4514
Annual Review of Law and Social Science (USA)	36	1.583	1.000 [49]	0.893 [25]	8.54 [79]	0.029 [181]	7 [189]	16 [48]	9 [55 law]	1.2107
Acta Sociologica (USA)	37	1.580	1.135 [42]	0.776 [30]	28.86 [46]	0.037 [65]	20 [97]	47 [42]	22 [31]	2.6896
Sociological Theory (UK)	38	1.565	0.974 [52]	0.991 [19]	109.50 [13]	0.035 [77]	29 [54]	146 [3]	22 [34]	1.2052
Society & Natural Resources (UK)	39	1.544	1.090 [45]	0.538 [53]	29.07 [45]	0.042 [138 env]	40 [63 env]	61 [32=]	33 [158 env]	3.6192
Th'y and Soc (Netherlands)	40	1.496	1.056 [47]	0.912 [24]	104.50 [16]	0.034 [93]	30 [49]	61 [32=]	24 [8 s sci m'd]	4.586

Journal	JCR 5-Year Impact Ranking	JCR 5-year Impact (1)	JCR Impact Factor (2)	Eigenfactor Article Influence (3)	Journal-ranking.com PII (4)	SCImago SJR (5)	SCImago (h-index) (6)	Publish or Perish g-index (7)	Microsoft A.Search (h-index) (8)	Cost Effectiveness (9)
Discourse and Society (USA)	41	1.438	0.672 [79]	0.802 [28]	27.24 [47]	0.033 [115]	29 [50]	63 [29=]	26 [6 comm'ion]	5.5417
Ethnic and Racial Studies (USA)	42	1.361	1.000 [49]	0.736 [33]	50.38 [31]	0.035 [81]	37 [27]	78 [18]	23 [3 ethnology]	1.3956
Body & Society (USA)	43	1.348	1.440 [23]	0.630 [43]	17.67 [62]	0.035 [8 cultural studies]	17 [7 cultural studies]	49 [41]	16 [43 anthrop]	5.5856
Social Indicators Research (Germany)	44	1.340	1.131 [43]	0.485 [59]	24.69 [51]	0.041 [67 soc sci misc]	36 [25 soc sci misc]	87 [13]	39 [103 soc sci]	4.7345
Sociological Quarterly (USA)	45	1.318	1.143 [39]	0.698 [35]	81.96 [21]	0.035 [75]	27 [63]	30 [46=]	35 [12]	1.7443
Media Culture and Society (USA)	46	1.275	1.140 [41]	0.658 [38]	20.71 [57]	0.030 [153]	24 [73]	62 [31]	20 [382]	5.4986
Social Science Quarterly (UK)	47	1.263	0.987 [51]	0.734 [34]	80.53 [7 soc sci Interdis]	0.042 [66 soc sci misc]	38 [19 soc sci misc]	80 [15=]	26 [245 soc sci]	0.4852

Journal	JCR 5-Year Impact Ranking	JCR 5-year Impact (1)	JCR Impact Factor (2)	Eigenfactor Article Influence (3)	Journal-ranking.com PII (4)	SCImago SJR (5)	SCImago (h-index) (6)	Publish or Perish g-index (7)	Microsoft A.Search (h-index) (8)	Cost Effectiveness (9)
Journal of Sport and Social Issues (USA)	48	1.257	1.050 [48]	0.594 [45]	23.88 [53]	0.029 [166]	19 [104]	42 [43]	13 [25 social Issues]	5.4769
Anthrozoos (USA)	49	1.252	0.860 [65]	0.375 [65]	16.35 [42]	0.041 [41]	18 [107]	32 [45]	14 [61]	3.3274
Sociology of Sport Journal (USA)	50	1.248	0.917 [54]	0.521 [56]	31.21 [43]		22 [69 orthopedics]	36 [44]	N/A	4.195

Notes

(1) The 5-year Impact Factor

This is available through the ISI Web of Science Journal Citation Reports. The *Annual Review of Sociology* has a 5-year Impact Factor of 5.881 and is ranked 1st out of 137 titles. Here is the calculation of how this figure is arrived at:

Cites in {2011} to items published in:	2010 =	98	Number of items published in:	2010 =	25
	2009 =	133		2009 =	27
	2008 =	161		2008 =	22
	2007 =	190		2007 =	25
	2006 =	112		2006 =	19
	Sum:	694		Sum:	118

Calculation:	Cites to recent items	694	= **5.881**
	Number of recent items	118	

(2) The Impact Factor

This is available through the ISI Web of Science Journal Citation Reports. The *Annual Review of Sociology* has an Impact Factor of 4.442. Here is the calculation of how this figure is arrived at:

Cites in 2011 to items published in:	2010 =	98	Number of items published in:	2010 =	25
	2009 =	133		2009 =	27
	Sum:	231		Sum:	52

Calculation:	Cites to recent items	231	= **4.442**
	Number of recent items	52	

By this criterion the *Annual Review of Sociology* is ranked first out of 137 titles.

(3) Eigenfactor: Article Influence Score

The *Article Influence* determines the average influence of a journal's articles over the first five years after publication. It is calculated by dividing a journal's *Eigenfactor* Score by the number of articles in the journal, normalized as a fraction of all articles in all publications. This measure is roughly analogous to the 5-Year Journal Impact Factor in that it is a ratio of a journal's citation influence to the size of the journal's article contribution over a period of five years.

The mean *Article Influence* Score is 1.00. A score greater than 1.00 indicates that each article in the journal has above-average influence. A score less than 1.00 indicates that each article in the journal has below-average influence.

With an Article Influence Score of 3.794 each article in *Annual Review of Sociology* has above average influence. By this metric *Annual Review of Sociology* ranks second of the 137 journals listed.

(4) Journal.ranking.com

The Paper Influence Index (PPI) of 663.94 for the *Annual Review of Sociology* is arrived at by this calculation. The Journal Impact Index of 14.69 is divided by the number of articles multiplied by 1000. Its PPI of 663.94 ranks *Annual Review of Sociology* third of the 138 journals indexed on journal-ranking.com.

(5) SCImago Journal Rank Indicator (SJR)

This is a measure of a journal's impact, influence or prestige. It expresses the average number of weighted citations received in the selected year by the documents published in the 3 previous years. The *Annual Review of Sociology* has an SJR of 0.092 and is ranked fourth in the 459 journals listed on SCImago for Sociology and Political Science.

SCImago uses information from the Scopus database to calculate its statistics.

(6) SCImago h-index

The h-index for *Annual Review of Sociology* is 75. This means that 75 articles have been cited 75 times or more. It is ranked fourth by its h-index of the 459 journals listed on SCImago for Sociology and Political Science.

The h-index was introduced by Hirsch in 2005. The advantage of the h-index is that it combines an assessment of both quantity (number of papers) and quality (impact, or citations to these papers) (Glänzel, 2006, cited by Harzing and Van der Wal,2007, p. 8). An academic cannot have a high h-index without having published a significant number of articles. At the same time these articles need to have been cited by other academics. The h-index will be higher for the academic who has published regularly articles which have an above average impact than for the academic who has published a limited number of highly cited articles. The value of the h-index has been confirmed by the research. Hirsch (cited in Harzing, 2007, p. 13) calculated the h-index of Nobel prize winners and found that 84% of them had an h-index of 30 or more.

(7) Publish or Perish g-index

Proposed by Leo Egghe (2006) in his paper 'Theory and practice of the g-index'*, Scientometrics,* 69(1), pp. 131-152. It aims to improve on the h-index by giving more weight to highly-cited articles (Publish or Perish).

Publish or Perish uses Google Scholar data to calculate its various statistics. *Annual Review of Sociology* is ranked sixth with a g-index of 127 out of the top 50 journals ranked by the 5-year Impact Factor.

(8) Microsoft Academic Search h-index

The h-index for *Annual Review of Sociology* is 88. This means that 88 articles have been cited 88 times or more. By this criterion ranks second of the 154 titles listed for Sociology.

Microsoft Academic Search draws on data produced by Microsoft Research. It covers more the 38 million publications.

(9) The cost effectiveness

The cost effectiveness metric is taken from Eigenfactor.

‘In order to compare journals both in Eigenfactor and price, we have come up with a metric called Cost Effectiveness (CE). CE is essentially the price divided by its Eigenfactor Score. The Eigenfactor scores for a given year sum to 100. We can do the same for price. The ratio of these two scaled numbers gives us CE. All else being equal, a journal would want a low Cost Effectiveness score. The average CE score for all journals is equal to 1. So, a journals with a CE value of 5 is 5 times the price/ef of the average journal in the collection’. (Eigenfactor, 2012).

The *Annual Review of Sociology* has a cost effectiveness score of 0.2832 which ranks it second of the 137 Sociology journals listed.

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